DOCUMENT RESUME

ED 144 266 EC 101 379

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TITLE The Effects of Chiropractic Treatment on Students With Learning and Behavioral Impairments Due to Neurological Dysfunction.
INSTITUTION Psychoeducational and Guidance Services, College Station, Tex.
PUB DATE 75
NOTE 20p.; Paper presented at the Annual Conference of the Association of Children with Learning Disabilities (12th, Texas)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Behavior Problems; Case Studies; Drug Therapy; Elementary Secondary Education; Exceptional Child Research; *Learning Disabilities; *Medical Treatment; *Neurologically Handicapped
IDENTIFIERS *Chiropractics

ABSTRACT

The effects of chiropractic treatment on children with learning and behavioral problems was investigated with 24 elementary and secondary level students, 12 receiving regular chiropractic treatment and 12 receiving medication. Results indicated that chiropractic treatment was more effective for the wide range symptoms common in the neurological dysfunction syndrome in which the following symptom areas were identified: attention span, hyperactivity, listening comprehension, reading comprehension, verbal output performance, writing output performance, following instructions, hand-eye coordination, overall coordination, effort, emotional maturity, behavior, and self-confidence. (Eleven case studies are briefly described.) (IM)

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Effects of Chiropractic Treatment On Students

With

Learning And Behavioral Impairments Due To Neurological Dysfunction

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HISTORY

In 1972, the director of Psychoeducational and Guidance Services, who had more than 10,000 students referred to him in a decade, noted that the few children referred to him who had Chiropractic treatment seemed to show marked benefits from this treatment.

The Texas Chiropractic Association requested that an independent study be conducted as a pilot program during the 1972-1973 school year. A high degree of standardization in the selection of students for the pilot research program was established. Students were selected by Psychoeducational and Guidance Service personnel, referred to Chiropractors who treated them, and periodically evaluated in the research program. The conclusions were as follows:

> This pilot study indicates that chiropractic treatment is a largely overlooked instrumentality which appears to be highly effective in the treatment of children with learning and behavioral problems. The pilot study also indicates the need for additional research.

Accordingly, a research project to determine the effectiveness of chiropractic treatment on students with learning and behavioral impairments due to neurological dysfunction was initiated during the scholastic year of 1973-74. The objectives of the research project were to determine whether findings would replicate the findings in the pilot program and also to compare the research population under chiropractic treatment with an identical population without chiropractic treatment.

PROCEDURE

Personnel conducting the research were a clinical psychologist, specializing in pupil appraisal, a superintendent of schools with forty years experience and holding a valid Texas Counselor's certificate, the Director of Psychoeducational and Guidance Services with forty years experience, fifteen of it as a Crisis Intervention Specialist. Data derived were analyzed by a Mathematician-Engineer, renowned in formulation of data models.

Three one day seminars were conducted by the research team for Chiropractors participating in the treatment aspects of the research population. These seminars were conducted for the purpose of assuring maximum standardization of students referred for the research projects, and to assure understanding of procedures in reporting data.

A total of 24 students were selected for the research population from the 40 initially evaluated. Twelve impaired students received chiropractic treatment and twelve who were either on medication alone or who were receiving no treatment of any kind but who presented identical symptoms were used as a comparison group.

The basic criteria for inclusion in the research population was that students had a history of failure, or very poor academic performance and social adjustment. All students included in the study were pre, in progress, and post evaluated on a scale system judgment of limiting impairments in one or more of the following symptom areas:

1. Attention span
2. Hyperkinetic
3. Auditory comprehension
4. Reading comprehension

5. Verbal output ability
6. Writing output ability
7. Instruction following ability
8. Hand-eye coordination
9. Gross motor coordination
10. Fine motor coordination
11. Self concept
12. Behavior
13. Effort and interest
14. Emotional maturity
15. Grades

Twelve of the 24 received regular chiropractic treatment. Twelve of the 24 did not receive chiropractic treatment but were or had been on medication, either a central nervous stimulant or tranquilizing drug. Six of the 12 on chiropractic treatment were also on medication at the beginning of the research program. Five of the population receiving chiropractic treatment had extensive histories of treatment in clinical facilities or hospitals.

PROCEDURES IN SELECTION, IN PROGRESS AND POST EVALUATIONS

A number of procedures and instruments were used in the initial selection of students for inclusion in the research population. Chiropractors had access to a number of instruments and had been trained on techniques of using them in the selection of students to be referred to the research team. The research team then proceeded to evaluate the referral and determine the final acceptance of the student into the research population.

Students included in the study were initially evaluated, in progress evaluated and post-evaluated on the following basis to derive data:

1. Parent evaluation of 26 reactive and behavioral characteristics.

2. Regular consultations with the parents by a member of the research team.
3. Grade period evaluations of the 15 possible limiting characteristics or symptom areas by educational personnel in the public schools.
4. Clinically administered tests.
5. School administered achievement tests.
6. Grade reports.
7. Reports from Chiropractors based on parent interviews.

A number of students, in addition to the twelve selected for inclusion in the research population, were also treated by chiropractors and evaluated by the research team but were excluded from the basic population because of difficulty of standardizing the criteria. It appeared, however, that these excluded students were benefited by chiropractic treatment to approximately the same degree as those included. Modes of evaluation were different on these excluded students and did not fit the standardization criteria.

Group A, 12 students regularly treated by Chiropractors consisted of 3 High School students, 3 Junior High students and 6 Elementary students during the school year 1973-74. Group B, the check population, received no treatment from Chiropractors.

Interpretation of Data

All students included in the study received pre-evaluations prior to treatment by a number of instruments and methods previously described.

Each case is identified by a number to preserve the confidentiality of the patient. A brief essay type summary of impairments is given as evaluated before and after treatment.

The following symptom areas are numbered 1 through 13:

SYMPTOM AREAS

1. Attention span _____
2. Hyperactivity _____
3. Listening comprehension _____
4. Reading comprehension _____
5. Verbal output performance _____
6. Writing output performance _____
7. Following instructions _____
8. Hand-eye coordination _____
9. Overall coordination _____
10. Effort _____
11. Emotional maturity _____
12. Behavior _____
13. Self confidence _____

A rating of the extent of severity of the symptom areas (see above) is based on a numerical scale of 1 through 5.

1. Excellent; practically no difficulties.
2. Good; few difficulties, none limiting.
3. Average; some difficulties, slightly impairing.
4. Poor; difficulties sufficient to cause near failure.
5. Difficulties of such severity that success is not likely.

In interpretation of data on each student, the impairment or symptom area is listed by number. No. 2, for instance is hyperactivity. If the pre-treatment rating of severity is 5 (Difficulties of such severity that success is not likely) and the post-treatment rating is 3 (Average, some difficulties) this means that the student has improved 40 per cent in reduction of hyperactivity.

GROUP A –
RECEIVING CHIROPRACTIC TREATMENT

Case C 91 High School Student:

Failing three subjects; history of failure; morale low; discipline problems; poor coordination; long history of clinical and medical treatment.

Characteristic or Symptom	Pre-Treatment Severity	Post-Treatment Severity
1	4	2
2	4	2
3	3	3
4	5	3
5	3	3
6	5	3
7	4	3
8	4	3
9	4	3
10	5	1
11	4	1
12	5	1
13	5	1

At the conclusion of the treatment period the student was passing all subjects, highly motivated, coordination improved to extent now participating in athletics; all former medication dropped.

Case C 92 High School Student:

Long clinical history, on 20 mg. Ritalin T.I.D.; also Dilantin, non-motivated, negative, passive non-verbal, failing in school work despite placement in special classes.

Characteristic or Sympton	Pre-Treatment Severity	Post-Treatment Severity
1	5	3
2	5	2
3	4	2
4	5	3
5	5	2
6	5	3
7	5	3
8	4	3
9	5	2
10	5	3
11	5	3
12	4	2
13	5	2

This student is not on the heavy dosage of Ritalin, is now talking; expressing herself. Reading speed and comprehension improved. (See Parent Evaluation A)

Case C 93 High School Student:

Initially on heavy dosages of medication, non-motivated. Long history of clinical evaluation and treatment. Failing most school subjects, marginal in others. Withdrawn, poor social integration.

Characteristic or Symptom	Pre-evaluation	Post-evaluation
1	5	3
2	5	2
3	4	3
4	5	4
5	5	3
6	4	3
7	4	3
8	5	3
9	4	3
10	5	2
11	4	3
12	4	1
13	5	2

At the end of the treatment period, the student's attitude was excellent, self-confidence improved; was passing all subjects; still having problems with reading comprehension, correctable, however because of better effort and concentration span. All medication discontinued after 4 months treatment. Vocational goal established.

Case CE 98 Elementary Student:

Student was extremely hyperkinetic, alleviated only temporarily by medication; discoordinated; irritable and had severe behavior problems at home and school. Grades were failing to marginal. Although only 8 years old Ritalin had been increased from an initial 5 mg. T.I.D. to a total of 70 mg. per day with steadily diminishing results. (70 mg. approached a danger level as a dosage.)

Characteristic or Symptom	Pre-evaluation	Post-evaluation
1	4	1
2	5	1
3	4	3
4	3	3
5	4	3
6	4	2
7	5	2
8	4	1
9	5	1
10	4	2
11	4	1
12	5	2
13	5	1

At the conclusion of treatment, the heavy dosage of Ritalin had been entirely discontinued. Coordination was improved to the extent that the student was an able Little League ball player, attitude was excellent, grades were up an average of one letter grade, and the student was considered free of all limiting factors. Behavior at home and school was exemplary.

Case CE 97 Elementary Student:

Student was non-verbal and functioning at a level of two grades below his grade placement. There were severe fine co-ordination problems, writing was illegible. Medication had been tried since there had been extensive clinical evaluations. Child was immature and non-motivated. He was enrolled in remedial classes with little progress being shown.

Characteristic or Symptom	Pre-evaluation	Post-evaluation
1	5	3
2	4	3
3	4	3
4	4	3
5	4	3
6	5	2
7	4	3
8	5	2
9	5	3
10	4	3
11	5	4
12	5	3
13	5	3

After treatment, gross and fine motor coordination markedly improved, handwriting progressed from illegible to good for age. From two grade level below placement, he progressed to grade level on achievement tests. He passed all subjects and was recommended by school for placement in regular classes except for remedial reading. Attitude, self-concept and effort progressed to normal.

Case CJ 94 Junior High Student:

Prior to treatment this 7th grade student had a number of severe learning impairments of long duration during which time he failed to acquire basic skills in Math, Reading and Language Arts. His visual perceptional—hand coordination was so impaired he refused, or did as little as possible in writing output. He was defeated, apathetic and depressed. His self-concept was poor. He was failing all subjects and engaged in no sports because of poor coordination.

Characteristic or Symptom	Pre-evaluation	Post-evaluation
1	5	3
2	4	3
3	4	3
4	4	4
5	5	3
6	5	4
7	5	3
8	5	3
9	5	4-3
10	5	3
11	5	3
12	3	3
13	5	3

There was no discernable improvement in overall grades because of lack of basic skills (4th grade level — Placement in 7th grade — summer remedial training was recommended). The student was more alert, interested and had more self-confidence. Coordination improvement was noted, especially in writing and he also began to participate in track and other athletic sports.

Case CE 99 Elementary Student:

This elementary student had received two clinical evaluations with a diagnosis of neurological dysfunction. Medication had been prescribed but was dropped after one month because symptoms were not alleviated. Fine and gross motor coordination was pronounced and the child was intensely hyperkinetic and was described as almost unmanageable at home. Due to a high mental ability the student was marginally passing all subjects at grade level. Fine motor coordination was so impaired student almost never did any written work. Sleeping and eating patterns were poor.

Characteristic or Symptom	Pre-Treatment Evaluation		Post-Treatment Evaluation
1	4		3
2	5		2
3	1	no change	1
4	1	no change	1
5	2	no change	2
6	5		3
7	4		3
8	4		2
9	5		3
10	3		3
11	4		3
12	5		3
13	3		1

During treatment and following treatment a very noticeable decrease in hyperactivity was noted. Grades improved, primarily because fine motor coordination improved to the extent that the child no longer dreaded written work. The mother stated that the child slept much better and her appetite was improved. Insomnia had been a serious problem and exhaustion was a factor in her behavior prior to treatment.

Case CE 100 Elementary Student:

This student was performing two grade levels below placement in Reading, Math and Language Arts. Although not a discipline problem at home or at school, the student was discouraged, lethargic, and had facial tics under pressure. Coordination was poor. Student frequently cried and wanted to drop P.E. because of poor performance. The student had been retained and was one grade level below age placement. Medication had been tried, however, the student had an adverse reaction; i.e., became very nervous and suffered loss of appetite.

Characteristic or Symptom	Pre-Treatment Evaluation	Post-Treatment Evaluation
1	5	4
2	(not applicable, lethargic)	
3	3	3
4	4 No change	4
5	4	3
6	5	4
7	5	4
8	5	3
9	5	2
10	5	Border 3-4
11	4	3
12	2	2
13	5	3

This student's confidence improved, he began to participate in athletics, playing softball at the end of the school year. At the end of the treatment period he evidenced interest in being enrolled in special reading and math classes. He had formerly resisted and made no effort when enrolled in private classes. If his deficiencies in basic background can be lessened, the prognosis is fair.

Case CE 101 Elementary Student:

This student was very marginally being passed in grade. There was a four year history of marginal accomplishment in school. He was nervous, underweight and suffered from insomnia. Medication was briefly tried but the student's emotional control became poor, frequently wept, and became incontinent. Medication was discontinued.

Characteristic or Symptom	Pre-Treatment Evaluation	Post-Treatment Evaluation
1	4	3
2	4	3
3	4	3
4	4	4
5	4	3
6	5	4
7	4	3
8	4	3
9	4	3
10	5	3
11	5	3
12	3	3
13	4	3

After treatment there was a marked reduction in nervousness and great improvement in emotional stability. The mother reported that his appetite was now normal and he began enjoying school during the last month. No appreciable difference in grades was noted although his teachers stated he was putting forth more effort and that the prognosis was good if the improvement continued.

Case CE 102 Elementary Student:

This student had been evaluated by numerous clinics, had formerly been placed in special education classes but was replaced in regular classes except for remedial reading at the beginning of the 1973-1974 research period. He was included late in the pilot program one year before but it was considered that he had not been under treatment long enough for results to be evaluated. He had been variously evaluated as minimally brain damaged, retarded and/or suffering from neurological dysfunction. He also suffered from severe emotional overlay.

Characteristic or Symptom	Pre-Treatment Evaluation	Post-Treatment Evaluation
1	4	2
2	3	3
3	3	3
4	5	3
5	5	3
6	5	3
7	4	3
8	4	2
9	4	2
10	4	2
11	5	1
12	4	2
13	5	2

After treatment, the student showed major improvement in self-confidence. His writing was dramatically improved and infantile reactions disappeared. His mother stated that he now enjoys public speaking in Church and school. Mental ability tests indicate above average intelligence (Indicating either better output ability or possible errors in previous mental ability test interpretations). Achievement tests indicated that the student was at normal grade level achievement at the end of the school term except for deficiencies in reading.

Case CJ 95 Junior High School Student:

This student was referred by parents. He was hyperkinetic, almost from birth and had a traumatic early developmental history supportive of a diagnostic impression of neurological dysfunction. Although of above average intelligence he was passing only two subjects, both marginally. He was beginning to present discipline problems at school. He was making little or no effort in school.

Characteristic or Symptom	Pre-Treatment Severity	Post-Treatment Severity
1	4	3
2	5	3
3	3	2
4	4	4
5	4	2
6	4	3
7	4	3
8	4	2
9	4	1
10	5	2
11	4	3
12	4	2
13	4	2

Fine and gross motor coordination improved markedly. Student began taking an interest in athletics and played Little League on a team that placed third in the State. Effort and motivation improved to the extent that plans to retain him were dropped and he was promoted. Reports at the third week of school (1974-75) indicate that his academic progress was excellent after a late summer remedial program.

Cast CJ 96 Junior High School Student:

This student suffered severe injuries in an automobile accident at age 3-1/2 and was in a coma three weeks, was blind and had paralysis on the left side. After recovery from the critical state his posture was abnormal; was tense; nervous and cyclic in being hyperkinetic. When initially seen his visual memory was impaired and he was making little effort in school. Although bright, he had difficulty with concentration on sustained tasks and quickly became mentally exhausted, tense and irritable. His entire scholastic history was poor. His writing ability was very poor.

Characteristic or Symptom	Pre-Treatment Evaluation	Post-Treatment Evaluation
1	4	3
2	4	3
3	3	3
4	3	3
5	3	3
6	5	3
7	3	3
8	5	3
9	5	3
10	5	3
11	4	3
12	4	2
13	4	2

This student's attitude and effort improved markedly. He was completing all home and school written assignments which he previously would not do because of his poor handwriting. Further evaluation is necessary to fully draw conclusions since the student was accepted late into the research population.

COMPARISON CONCLUSIONS

Group B consisted of 12 students; 3 High School students, 3 Junior High students and 6 Elementary students who had essentially identical impairments as Group A (Treated by chiropractors). All in Group B were either on medication, central nervous system stimulants or tranquilizer type drugs or both, or had been on medication.

Initially, medication seemed to be effective on nine of the twelve in controlling hyperactivity and improving attention span but required increasingly larger dosages with decreasing effectiveness. Three of the twelve initially on medication did not benefit and were taken off medication after a trial. Of the nine who initially benefited by control of hyperactivity and improved attention span only one showed improvement in fine and gross motor coordination.

Personality alterations, loss of appetite and insomnia were reported in fifty percent of the cases while on medication.

Using the same evaluations criteria in pre, in progress and post evaluation for both Group A (Treated by chiropractors) and Group B (Treated by medication alone) it was concluded that chiropractic treatment was more effective for the wide range symptoms common in the neurological dysfunction syndrome in which thirteen symptom or problem areas were considered.

Reduction of hyperactivity and improvement in attention span in the population of the two groups was approximately equal initially but the effectiveness of medication alone in these two symptom areas was not as sustained as chiropractic treatment effects. Statistically, chiropractic treatment was twenty to forty percent more effective than the commonly used medications. The difference in impairment rating improvement, especially in alleviation of nervous tension, effort and motivation, and coordination significantly improved the probabilities of change from failure to success.

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